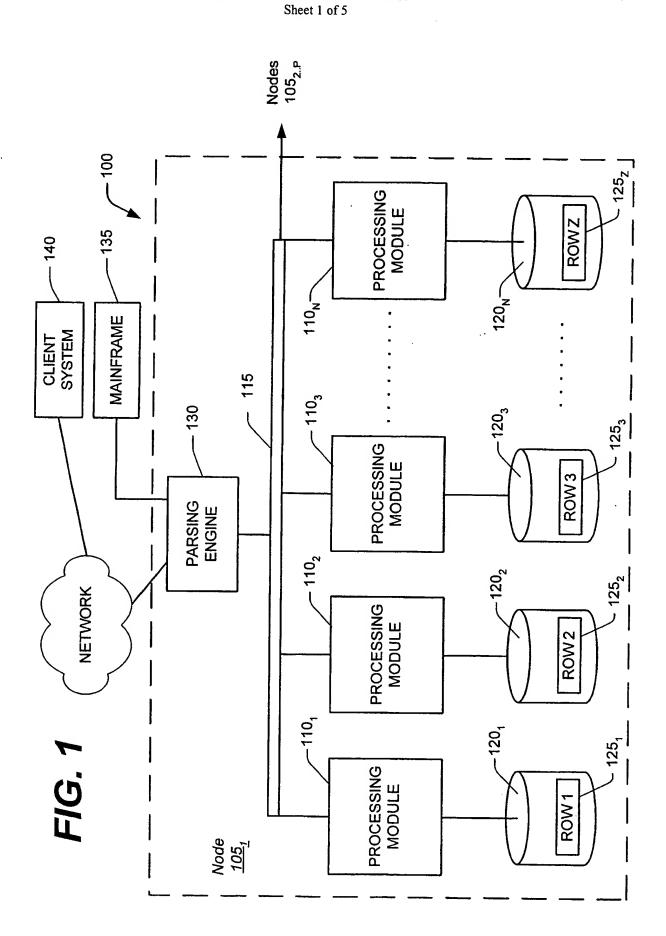Express Mail #EV339222823US
Filed: 12/12/03; File No. NCR 11235
Inventor: James Blair Chapman
For: Row Distribution in a Relational...
Contact: John D. Cowart/858-485-4903
Sheet 1 of 5

FIG. 1

Express Mail #EV339222823US
Filed: 12/12/03; File No. NCR 11235
Inventor: James Blair Chapman
For: Row Distribution in a Relational...
Contact: John D. Cowart/858-485-4903
Sheet 2 of 5

SQL
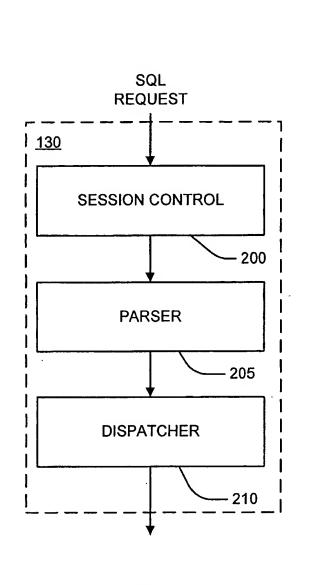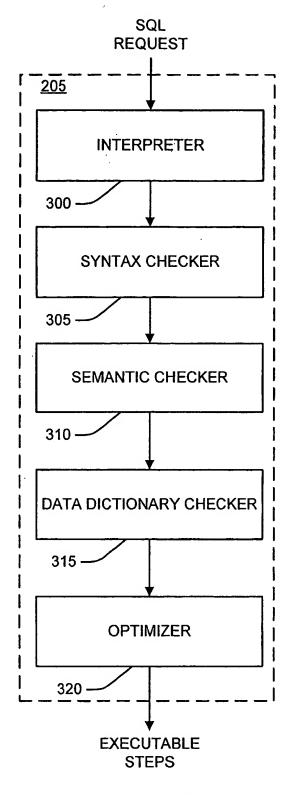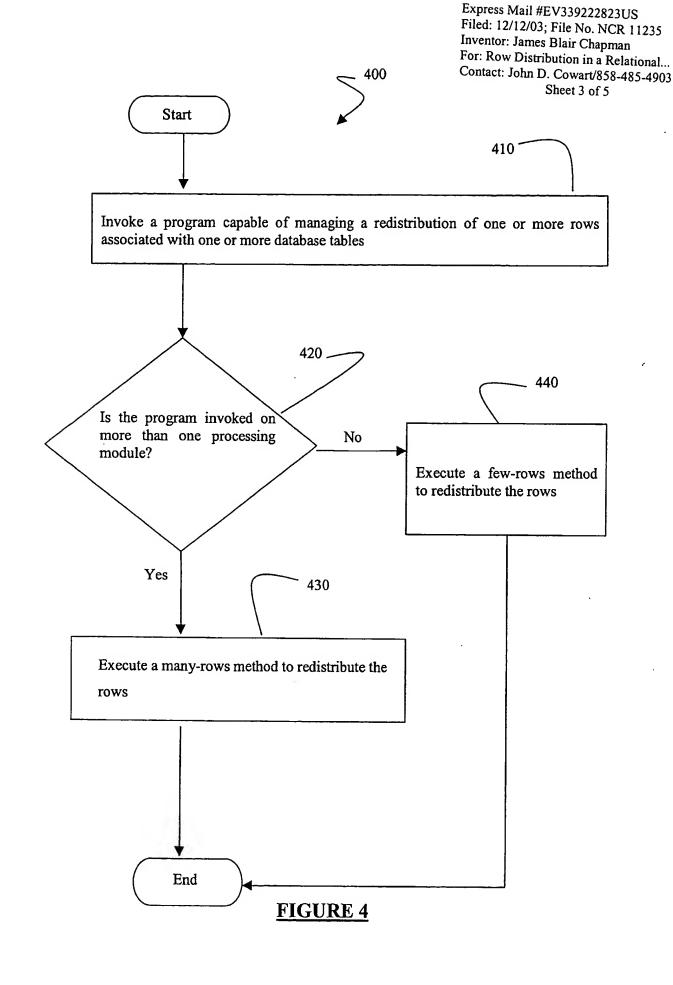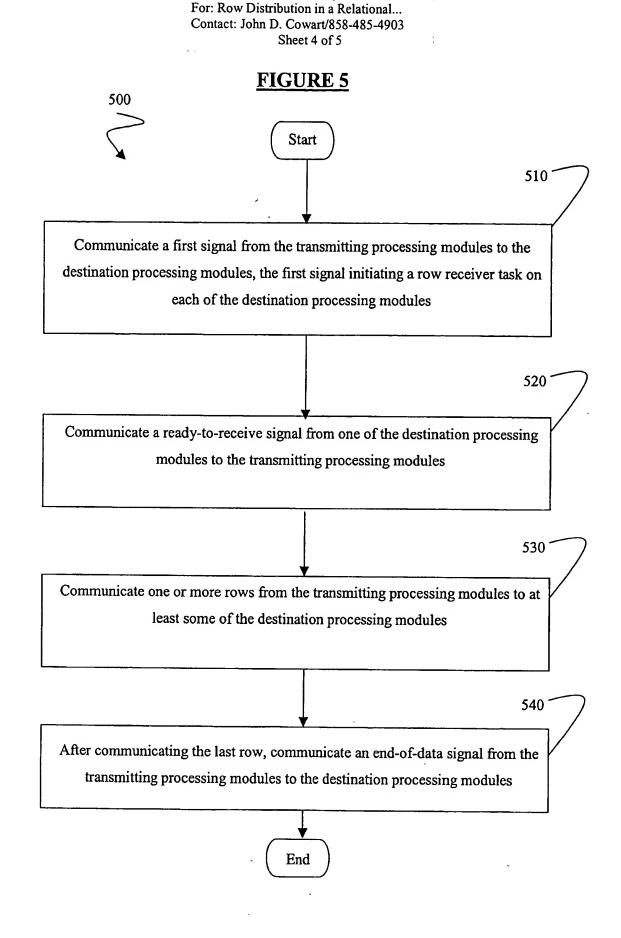REQUEST

130

SESSION CONTROL

— 200

PARSER

— 205

DISPATCHER

— 210

FIG. 2

SQL
REQUEST

205

INTERPRETER

300 —

SYNTAX CHECKER

305 —

SEMANTIC CHECKER

310 —

DATA DICTIONARY CHECKER

315 —

OPTIMIZER

320 —

EXECUTABLE
STEPS

FIG. 3

400

```
┌─────────────┐
│    Start    │
└─────────────┘
       │
       ▼
┌──────────────────────────────────────────────────────────────┐  410
│ Invoke a program capable of managing a redistribution of one   │
│ or more rows associated with one or more database tables       │
└──────────────────────────────────────────────────────────────┘
       │
       ▼
     ╱────╲
    ╱      ╲          420
   ╱ Is the ╲
  ╱ program  ╲  No     ┌────────────────────────┐  440
 ╱ invoked on ╲───────▶│ Execute a few-rows     │
 ╲ more than   ╱        │ method to redistribute │
  ╲ one       ╱         │ the rows               │
   ╲processing╱         └────────────────────────┘
    ╲module? ╱                     │
     ╲──────╱                      │
       │                           │
      Yes                          │
       │          430              │
       ▼                           │
┌──────────────────────────────┐   │
│ Execute a many-rows method to │  │
│ redistribute the rows         │  │
└──────────────────────────────┘   │
       │                           │
       ▼                           │
┌─────────────┐                    │
│     End     │◀───────────────────┘
└─────────────┘
```

FIGURE 4

FIGURE 5

500

Start

510

Communicate a first signal from the transmitting processing modules to the destination processing modules, the first signal initiating a row receiver task on each of the destination processing modules

520

Communicate a ready-to-receive signal from one of the destination processing modules to the transmitting processing modules

530

Communicate one or more rows from the transmitting processing modules to at least some of the destination processing modules

540

After communicating the last row, communicate an end-of-data signal from the transmitting processing modules to the destination processing modules

End

Express Mail #EV559222825US
Filed: 12/12/03; File No. NCR 11235
Inventor: James Blair Chapman
For: Row Distribution in a Relational...
Contact: John D. Cowart/858-485-4903
Sheet 5 of 5

FIGURE 6

600

610

Start

Allocate a buffer on the transmitter module, the buffer capable of deferring an action associated with the program

Are there any rows to store in the allocated buffer

No

620

Yes

640

Are there any rows stored in the allocated buffer

No

660

Return "no rows" message

Yes

Communicate a message to one or more destination processing modules, the message capable of initiating a row receiver task on each of the destination processing modules and comprising at least some of the rows stored in the allocated buffer

650

End

630

Is there sufficient memory to store the row in the allocated buffer

No

670

Exit the few-rows method and revert to the many-rows method to redistribute the rows

Yes

Store a row of a database table in the allocated buffer

635